

Missouri Department of Natural Resources



PUBLIC NOTICE

APPLICATION FOR MISSOURI STATE OPERATING PERMIT

DATE: October 22, 2004

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed effluent limitations and/or determinations are invited to submit them in writing to the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, ATTN: Cynthia S. Davies, Water Section Chief. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The department may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by November 21, 2004 or received in our office by 5:00 p.m. on November 24, 2004. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits, comments, and other information including copies of applicable regulations are available for inspection and copying at the department's website, www.dnr.mo.gov/wpscd/wpcp/homewpcp.htm, or at the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: October 22, 2004

Permit Number: MO-0117731

Southwest Regional Office

FACILITY NAME AND ADDRESS	NAME AND ADDRESS OF OWNER
A & A, Inc. Wolverine Way (Hwy 54 & Route A) Linn Creek, MO 65052	A & A, Inc. P.O. Box 589 Linn Creek, MO 65052
RECEIVING STREAM & LEGAL DESCRIPTION	TYPE OF DISCHARGE
Tributary to Lake of the Ozarks (U) Tributary to Barnett Hollow (U) Unnamed Tributary to Sellers Hollow (U) NW¼, NE¼, Sec. 08, T38N, R16W, Camden County S½, SW¼, Sec. 25, T38N, R15W, Camden County SE¼, SE¼, Sec. 26, T38N, R15W, Camden County N½, NW¼, Sec. 36, T38N, R15W, Camden County N½, SE¼, Sec. 08, T38N, R16W, Camden County S½, SW¼, Sec. 05, T37N, R15W, Camden County	Domestic, modification

This is a notice due to a change in the effluent and limitations and monitoring requirements and to add land application sites.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended.

Permit No. MO-0117731

Owner: A & A, Inc.
Address: P.O. Box 589, Linn Creek, MO 65052

Continuing Authority: Same as above
Address: Same as above

Facility Name: A & A, Inc.
Facility Address: Hwy 54 & Route A, Linn Creek, MO 65052

Legal Description: See page 2
Receiving Stream: See page 2
First Classified Stream and ID: See page 2
USGS Basin & Sub-watershed No.: See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date (Revised)

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date
MO 780-0041 (10-93)

R. Bruce Martin, Director, Southwest Regional Office

Legal Description (continued):

NW¼, NE¼, Sec. 08, T38N, R16W, Camden County
S½, SW¼, Sec. 25, T38N, R15W, Camden County
SE¼, SE¼, Sec. 26, T38N, R15W, Camden County
N½, NW¼, Sec. 36, T38N, R15W, Camden County
N½, SE¼, Sec. 08, T38N, R16W, Camden County
S½, SW¼, Sec. 05, T37N, R15W, Camden County

Receiving Stream (continued):

Tributary to Lake of the Ozarks (U)
Tributary to Barnett Hollow (U)
Unnamed Tributary to Sellers Hollow (U)

First Classified Stream and ID (continued):

Lake of the Ozarks (L2) (7205) 303(d)
Wet Glaize Creek (P) (01147)
Sellers Hollow (C) (01146)

USGS Basin & Sub-watershed No. (continued):

(10290109-080002)
(10290109-070003)
(10290109-060004)

FACILITY DESCRIPTION (continued)

Outfall #001 – Private Septage / Sludge Hauler / Lagoon – SIC #7699

NW¼, NE¼, Sec. 08, T38N, R16W, Camden County

Septage / Sludge-only facility for no-discharge.

Two storage basins / anaerobic sludge digestion / sludge is land applied.

Design flow is 17,840 gallons per day (1-in-10 design including net rainfall minus evaporation).

Average design flow is 15,120 gallons per day (dry weather flows).

Design sludge production is 460 dry tons per year.

Design Basis:

Average Annual

Design dry weather flows: 15,120 gpd

Design with 1-in-10 year flows: 17,840 gpd

Basins #001

Lagoon Dimensions:

	<u>Surface Area</u>	<u>Depth from Bottom</u>	<u>Pump down depth (from spillway)</u>
Center Line Top Berm:	16,080 sq.ft.	by <u>4.0</u> feet depth	3.0 feet
Inside Top Berm:	5,050 sq.ft.		
Freeboard: (2.0 feet)			
Maximum operating level:		<u>2.0</u> feet depth	2.0 feet
Minimum operating level:		<u>1.0</u> feet depth	3.0 feet

Basin #002

Lagoon Dimensions:

	<u>Surface Area</u>	<u>Depth from Bottom</u>	<u>Pump down depth (from spillway)</u>
Center Line Top Berm:	38,514 sq.ft.	by <u>7.0</u> feet depth	6.0 feet
Inside Top Berm:	8,740 sq.ft.		
Freeboard: (2.0 feet)			
Maximum operating level:		<u>5.0</u> feet depth	2.0 feet
Minimum operating level:		<u>1.0</u> feet depth	6.0 feet

Storage volume (minimum to maximum water levels)

200,000 gallons

1,000,000 gallons

1-in-10 year annual storm water flows into lagoon (R-E): 132,820 cu.ft. (993,500 gallons)

FACILITY DESCRIPTION (continued)

Storage Capacity: **Average Annual**

Design for dry weather flows: 80 days
Design with 1-in-10 year flows: 70 days

Outfall #002 – Land application site

S½, SW¼, Sec. 25, T38N, R15W, Camden County

SE¼, SE¼, Sec. 26, T38N, R15W, Camden County

N½, NW¼, Sec. 36, T38N, R15W, Camden County

Sludge volume per year: 2,865,104 gallons (including 1-in-10 year flows); 202.4 dry tons/year
Irrigation areas: 85.5 acres at design loading (193.8 acres total available on all sites)
Application rates per acre: 2.4 dry tons/year
Field slopes: less than 12 percent
Equipment type: multiple tank
Vegetation: grass land
Application rate is based on: plant available nitrogen loading rate
Other (describe): Lime is added to septage.

Outfall #003 – Land application site

N½, SE¼, Sec. 08, T38N, R16W, Camden County

Sludge volume per year: 1,367,436 gallons (including 1-in-10 year flows) 96.6 dry tons/year
Irrigation areas: 40.0 acres at design loading (193.8 acres total available on all sites)
Application rates per acre: 2.4 dry tons/year
Field slopes: less than 12 percent
Equipment type: multiple tank
Vegetation: grass land
Application rate is based on: plant available nitrogen loading rate
Other (describe): Lime is added to septage.

Outfall #004 – Land application site

S½, SW¼, Sec. 05, T37N, R15W, Camden County

Sludge volume per year: 2,279,060 gallons (including 1-in-10 year flows) 161.0 dry tons/year
Irrigation areas: 68.3 acres at design loading (193.8 acres total available on all sites)
Application rates per acre: 2.4 dry tons/year
Field slopes: less than 12 percent
Equipment type: multiple tank
Vegetation: grass land
Application rate is based on: plant available nitrogen loading rate
Other (describe): Lime is added to septage.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 4 of 12	
					PERMIT NUMBER MO-0117731	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001</u> – Emergency discharge from lagoon or irrigation sites (Note 1)						
Flow	MGD	*		*	once/day**	24 hr. estimate
Biochemical Oxygen Demand ₅	mg/L		45	45	once/week**	grab
Total Suspended Solids	mg/L		45	45	once/week**	grab
pH – Units	SU	***		***	once/week**	grab
Fecal Coliform	#/100mL	****		****	once/week**	grab
Ammonia Nitrogen as N	mg/L	****		****	once/week**	grab
Temperature (degrees)	C	****		****	once/week**	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____.						
<u>Outfall #001</u> – Land Application Operational Monitoring (Notes 2 & 3)						
Lagoon Freeboard	feet	*			once/month	measured
Irrigation Period	hours	*			daily	total
Volume Irrigated	gallons	*			daily	total
Application Area	acres	*			daily	total
Application Rate	inches / acre	*			daily	total
Rainfall	inches	*			daily	total
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____.						
<u>Outfall #002, #003, & #004</u> – Sludge Land Applied (Notes 4 & 5)						
Total Suspended Solids	mg/kg	*			once/quarter	grab
pH – Units	SU	*			once/quarter	grab
Total Kjeldahl Nitrogen as N	mg/kg	*			once/quarter	grab
Nitrate / Nitrite as N	mg/kg	*			once/quarter	grab
Ammonia Nitrogen as N	mg/kg	*			once/quarter	grab
Oil and Grease	mg/kg	*			once/quarter	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)					PAGE NUMBER 5 of 12	
					PERMIT NUMBER MO-0117731	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #002, #003, & #004 – Land Application – Soil Monitoring (Notes 6 & 7)						
Ammonia Nitrogen as N	mg/kg	*			once/5 years	grab
Nitrate / Nitrite as N	mg/kg	*			once/5 years	grab
Available Phosphorus as P (Bray 1-P method)	mg/kg	*			once/5 years	grab
pH – Units	SU	6.0-7.5			once/5 years	grab
Cation Exchange Capacity	CEC	*			once/5 years	grab
Organic Matter	%	*			once/5 years	grab
MONITORING REPORTS SHALL BE SUBMITTED EVERY 5 YEARS THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I & III</u> STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** Monitor only when discharge occurs. Report as no-discharge when a discharge does not occur during the report period.
- *** pH is measured in pH units and is not to be averaged. The pH is to be maintained at or above 6.0 pH units.
- **** Comply with water quality standards per Special Conditions #5.

Note 1 - No-discharge Facility requirements: Wastewater shall be stored and land applied during suitable conditions so that there is no-discharge from the lagoon or irrigation site. An emergency discharge may occur when excess wastewater has accumulated above feasible irrigation rates due to precipitation exceeding the 1-in-10 year 365 day rainfall or the 25-year-24-hour storm event.

Note 2 Records shall be maintained and summarized into an annual operating report, which shall be submitted by January 28th of each year for the previous calendar year. The report shall include the following:

- a. Record of maintenance and repairs during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year;
- b. The number of days the lagoon has discharged during the year, the discharge flow, the reasons discharged occurred and effluent analysis performed; and
- c. A summary of the irrigation operations including freeboard at the start and end of the irrigation season, the number of days of irrigation for each month, the total gallons irrigated, the total acres used, crops grown, crop yields per acre, the application rate in inches per acre per day and for the year, the monthly and annual precipitation received at the facility and summary of testing results.

Note 3 – Storage basin freeboard shall be reported as basin water level in feet below the overflow level. See Special Conditions for Wastewater Irrigation System requirements.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 4 – Sludge that is land applied shall be sampled at the storage basin or application vehicle. Sludge must be tested per Standard Conditions Part III.

Note 5 – Monitor once per quarter in the months of March, June, September, and December.

Note 6 – Sample the top 6 to 12 inches of soil. Composite samples shall be collected from each land application site and each soil type in accordance with University of Missouri publication G9110, Sampling Your Soil for Testing. Testing shall conform to Soil Testing Procedures for North Central Region (North Dakota Agricultural Experiment Bulletin 499 – Revised); Methods of Soil Analysis, American Society of Agronomy, Inc. Soil Testing and Plant Analysis, Soil Science Society of America Inc.; EPA Methods; or other methods approved by the department.

Note 7 - The permittee must conduct soil monitoring every 5 years with the first report due on January 28, 2006.

C. SPECIAL CONDITIONS

1. Report as no-discharge when a discharge does not occur during the reporting period.
2. Outfalls must be marked in the field and on the topographic site map submitted with the permit application.
3. Permittee will cease discharge by connection to area wide wastewater treatment system within 180 days of notice of its availability.
4. Water Quality Standards
 - (a) Discharges to waters of the state shall not cause a violation of water quality standards rule 10 CSR 20-7.031, including both specific and general criteria.
 - (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
 - (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
 - (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
 - (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
 - (5) There shall be no significant human health hazard from incidental contact with the water;
 - (6) There shall be no acute toxicity to livestock or wildlife watering;
 - (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
 - (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

5. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

6. Reopener Clauses

This permit may be reopened and modified or alternatively revoked and reissued, to incorporate new or modified limitations or other conditions pertaining to phosphorus application rates to soils, the adequacy of wastewater lagoon liners, or other special conditions as may be necessary to protect waters of the state.

Comprehensive Nutrient Management Plan. The permit may be modified or reopened to require submittal of a Comprehensive Nutrient Management Plan (CNMP) in accordance with USEPA and USDA guidelines and regulations or where determined appropriate by the department to meet water quality standards for nutrients. This determination may be based upon ambient water quality monitoring, Section A monitoring requirements and other applicable information.

This permit may be reopened and modified, or alternatively revoked and reissued, to:

- (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
- (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
- (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

C. SPECIAL CONDITIONS (continued)

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities

- (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
- (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids that are removed from the domestic wastewater treatment lagoon during lagoon clean out and maintenance activities. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids from the lagoon. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

8. Lagoons and earthen basins shall have a liner that is designed, constructed and maintained in accordance with 10 CSR 20-8.020(13)(A)4. If operating records indicate, excessive percolation, the department may require a water balance test in accordance with 10 CSR 20-8.020(16) or other investigations to evaluate adequacy of the lagoon seal. The department may require corrective action as necessary to eliminate excess leakage.

9. Sludge Land Application System – Industrial Sludge. (Outfall #002)

- (a) Land Application Design – No-Discharge. Design and operation shall be in accordance with 10 CSR 20-8.020(15). Permittee shall operate the land application system in accordance with the design parameters listed in the Facility Description section of this permit. Sludge shall be stored and land applied during suitable conditions so that there is no-discharge from the storage site or land application site. An emergency discharge may occur when excess wastewater has accumulated above feasible land application rates due to precipitation exceeding the 1 in 10 year 365 day rainfall or the 25- year 24-hour storm event. The emergency discharge shall not cause a violation of water quality standard general or specific water quality criteria in 10 CSR 20-7.031.
- (b) Metals Loading Limitations. Application of trace metals shall not exceed the concentrations and loading limits for each metal as specified in University of Missouri publication WQ 425, revised 4/95. When metals concentrations exceed values in Table 2 of WQ 425, the remaining metals capacity of the site will be calculated each time biosolids are spread. When the cumulative limit is reached, biosolids addition will be halted.
- (c) Storm Water Runoff. There shall be no contaminants discharged from the land application sites by storm water that cause violation of the Water Quality Standards rules for general criteria and specific criteria under 10 CSR 20-7.031.
- (d) Discharge Reporting. Any unauthorized discharge from storage, treatment or land application system shall be reported to the department as soon as possible but always within 24 hours. Discharge is allowed only as described in the Facility Description and Effluent Limitations sections of this permit.
- (e) Land Application Site Locations. The permittee shall land apply only to suitable sites located within the overall property boundaries and descriptions listed in the permit application and approved Operation and Maintenance Manual. Permittee requests for additional sites including non-owned property must follow permit modification procedures prior to land application. To request additional sites, the permittee should submit a revised application Form A and R, mailing addresses for first downstream land owners of each site, topographic maps and other pertinent information for the proposed sites.
- (f) Subsurface Injection Requirement. Subsurface Injection or immediate incorporation after surface application should be considered where feasible and practicable to reduce exposure to wash off by storm water runoff and to retain nutrients in the soil for crop requirements. Surface application may be used when practical in accordance with procedures in the approved Operation and Maintenance Manual.
- (g) Saturated / Frozen Conditions. There shall be no application during frozen, snow covered, or saturated soil conditions. There shall be no application on days when more than 0.2 inches of precipitation is received or when there is observation by operator of an imminent or impending rainfall event. An on-site visual investigation of the field's soil moisture condition, followed by testing of the soils, will be made to determine whether land application can occur. The visual and soil test procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

C. SPECIAL CONDITIONS (continued)

9. Wastewater Irrigation System (continued)

- (h) Buffer Zones. There shall be no irrigation within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal; 100 feet of gaining streams or tributaries; 50 feet of wet weather gaining streams and tributaries; 150 feet of dwellings; or 50 feet of the property line. For subsurface injection, buffer zones may be reduced to 25 feet from gaining streams.
- (i) Application Equipment. The application system shall be operated so as to provide uniform distribution of wastes over the entire land application site. Land application shall occur only during daylight hours. The application system shall be capable of applying the annual design flow during an application period of less than 100 days or 800 hours per year.
- (j) Equipment Checks During Land Application. The application system and application site shall be visually inspected at least **once per hour** during land application to check for equipment malfunctions and runoff from the application site.
- (k) Biosolids Transport. Biosolids will be hauled to the application site by highway tanker trailer. Any spillage from the transporting operation must be cleaned up immediately, and the quantity spilled must be reported within twenty-four (24) hours.
- (l) Public Access Restrictions. Public access shall not be allowed to the land application site(s). Fencing and public access restrictions to land application sites shall be in accordance with requirements in 10 CSR 20-8.020(15)(B)(5).
- (m) Fact Sheets. Fact sheets shall be prepared for each application site giving the following information. Land owners name, address, telephone number, acreage, designation of buffer zones around limiting features, nutrient content of biosolids and the application rates with the maximum per year. The actual boundaries of the allowed land application locations will be marked on each site prior to the injecting of biosolids.
- (n) Daily Log Sheets. Daily log sheets shall be prepared and kept for each application site showing amounts of biosolids applied per acre, dates of application, nutrients applied, and crop yields.
- (o) Construction of Biosolids Storage. If additional biosolids storage facilities become necessary, a construction permit shall be obtained before construction of such facilities begins, and the facilities shall be built in accordance with the appropriate regulations and design guides.
- (p) Storage Basin Operating Levels - No-discharge Systems. The minimum and maximum operating water levels for the storage basin shall be clearly marked. Each lagoon shall be operated so that the maximum water elevation does not exceed one foot below the overflow point except due to exceedances of the 1-in-10 year or 25-year-24 hour storm events. Wastewater shall be land applied whenever feasible based on soil and weather conditions and permit requirements. Storage lagoon(s) shall be lowered to the minimum operating level prior to each winter by November 30.
- (q) Emergency Spillway. Lagoons and earthen storage basins should have an emergency spillway to protect the structural integrity of earthen structures during operation at near full water levels and in the event of overflow conditions. The spillway shall be at least one foot (1') below the top of berm. The department may waive the requirement for overflow structures on small existing basins.

C. SPECIAL CONDITIONS (continued)

9. Nutrient Management

- (a) Nitrogen. The permittee shall not exceed the plant available nitrogen management approach as listed in this permit.
- (b) Phosphorus. When soil test phosphorus (P) levels are above 120 pounds per acres using Bray P-1 test method, the sludge application rate shall not exceed the annual crop requirements for available phosphorus in accordance with state NRCS guidelines. When state NRCS standards and guidelines become available, the permit will be revised to include the Phosphorus Threshold and Phosphorus Index methods to be developed under the USDA, NRCS National Policy, General Manual, Part 402.06.
- (c) The actual application rates for a given year or growing season must be adjusted based on the approved management approach and the actual sludge and soil testing results and crop requirement. If crop yields are less than that predicted in the permit application, the application rates must be reduced or the yields increased through appropriate changes in management practice.
- (d) This permit will be modified to require a Nutrient Management Plan (NMP) after promulgation of applicable state, EPA and USDA rules and guidelines. The NMP will replace the current PAN and phosphorus methods.

10. Plant Available Nitrogen (PAN) Procedure

- (a) Wastewater, sludge and fertilizer nitrogen application shall not exceed the crop nitrogen requirements based on realistic crop yield goals and the Plant Available Nitrogen (PAN) method. The wastewater application rate shall be calculated as follows:

$$\text{PAN} = \text{CNR} - \text{SRN} - \text{CFN}$$

WHERE: **CFN** = Commercial Fertilizer Nitrogen applied in pounds N/acre.
CNR = Crop Nitrogen Requirement in pounds N/acre.
PAN = Plant Available Nitrogen in wastewater and sludge expressed as annual pounds N/acres.
SRN = Soil Residual Nitrogen in pounds N/acre.

- (b) Plant Available Nitrogen (PAN) is calculated as follows:

$$\begin{array}{rcl} \text{PAN} = & [\text{Ammonia Nitrogen}] & \times \quad [\text{Availability Factor}] \\ & + \quad [\text{Organic Nitrogen}] & \times \quad [\text{Availability Factor}] \\ & + \quad [\text{Nitrate Nitrogen}] & \times \quad [\text{Availability Factor}] \end{array}$$

For anaerobic treated wastewater and sludge, the nitrate nitrogen amounts will be negligible and can be ignored.

C. SPECIAL CONDITIONS (continued)

10. Plant Available Nitrogen (PAN Procedure) (continued)

(c) Plant Available Nitrogen (PAN) Availability factors are as follows:

(1) Average Availability factors for all fields:

Types of Nitrogen	Surface Application	Immediate Incorporation or Subsurface Injection
Organic	0.10 – 0.70*	0.10 – 0.70*
Ammonia	0.6**	0.9**
Nitrate	0.9**	0.9**

* Organic Nitrogen = [Total Kjeldahl Nitrogen as N] – [Ammonia as N]. Availability Factors based on time after application and waste type are:

Type of Wastewater And Sludge Treatment Method	Organic Nitrogen Availability Factor by Time Period			
	Year 1	Year 2	Year 3	Cumulative Year 3+
Aerobic wastewater lagoon and sludge	0.20	0.10	0.05	0.35
Anaerobic wastewater lagoon and sludge	0.40	0.20	0.10	0.70
Aerobic sludge-only storage basin/lagoon	0.40	0.20	0.10	0.70
Extended aeration plant and sludge	0.40	0.20	0.10	0.70
Waste activated treatment plant (liquids, primary/secondary sludges)	0.40	0.20	0.10	0.70
Lime Stabilized Sludge	0.40	0.20	0.10	0.70
Aerobic Sludge Digester	0.30	0.15	0.08	0.53
Anaerobic Sludge Digester	0.20	0.10	0.05	0.35
Composted Sludge (Class A)	0.10	0.05	0.03	0.18

NOTES: Year 1 is the current year of waste application; year 2 is the previous year of waste application; and year 3 is waste application two years ago. Nitrogen availability for years 1, 2 and 3 must be added when waste is applied in consecutive years. The cumulative factor is used when waste is applied at about the same rate for 3 consecutive years or longer.

** Average inorganic nitrogen availability based on the typical soil and climate conditions when considering additions due to precipitation, dry deposition, and foliar absorption versus losses due to volatilization and denitrification (10% denitrification loss is included). The permittee may choose to use this average value for all fields or may adjust the N availability based on site specific soil conditions using the following tables under ‘field Specific Availability Factors for Inorganic Nitrogen’.

(d) Soil Residual Nitrogen (SRN).

(1) For Annual Crops, the nitrogen availability from soil organic matter must be included based on soil CEC and crop season as follows:

SRN in pound N/acre* = [percent organic matter] x Soil Availability Factor

Soil Availability Factor By Soil CEC Ranges and Organic Matter				
Growing Season	Organic Matter	CEC <10	CEC 10-18	CEC >18
Summer	1%	40*	20	10
Winter	1%	20*	10	5

*Note: If CEC is less than 10 and organic matter is 1.5% or greater, the total SRN is constant at 60 pound nitrogen for summer and 30 pounds for winter.

C. SPECIAL CONDITIONS (continued)

10. Plant Available Nitrogen (PAN Procedure (continued)

(d) Soil Residual Nitrogen (SRN) (continued)

(2) For Perennial Crops the SRN is considered zero (0) for purposes of these calculations because the SRN has already been considered in the crop fertilization recommendations in the referenced publications.

(e) Crop nitrogen requirements shall be based on University of Missouri publication, Soil Test Interpretations and Recommendations Handbook, as revised or one of the other reference publications listed in this permit. Alternate reference publications may be used only upon prior approval by the department and shall be listed in the approved Operation and Maintenance Manual.

(f) If a crop is not harvested, the PAN rate shall not exceed 40 lbs/acre/year and grass vegetation must be maintained on the site.

(g) PAN calculations, application amounts, crop yields and crop removal rates shall be listed in the annual report.

(h) Conversion Factors for laboratory testing results:

$$[\text{mg/L or mg/kg or ppm}] \times [\text{conversion factor}] = [\text{pounds per Unit Volume}]$$

Unit Volume	Conversion Factors
1 lbs/acre inch	0.226
1 lbs/1,000 gallons	0.0083
1 lbs/100 cubic feet	0.0062
1 lbs/ton (wet wt)	0.002

(i) Alternate nitrogen availability factors may be considered based upon site-specific conditions for each filed and submittal of scientific justification. Alternate factors will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

(j) Supplemental nitrogen may be added to row crops when determined necessary for proper plant growth based on testing of plant vegetation or soil nitrate testing during the growing season. Procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

(k) Primary reference publications used herein are:

(1) Livestock Waste Facilities Handbook, Midwest Plan Service, MWPS-18, April 1993.

(2) National Engineering Handbook, Part 651, Agricultural Waste Management Field Book, USDA, Natural Resources Conservation Service (NRCS), April 1992 and current supplements.

(3) Managing Nitrogen for Groundwater Quality and Farm Profitability, Soil Science Society of America, Inc. 1991

(4) Soil Test Interpretations and Recommendations Handbook, University of Missouri, Department of Agronomy, December 1992.

(5) Land Application of Sewage Sludge, EPA/831-B-002b, U.S. Environmental Protection Agency, December, 1994

